

REMARKS

The Examiner is thanked for the thorough examination of the present application. The Office, however, tentatively rejected all claims 1-19. Specifically, the Office Action rejected claims 1, 11, 15, 16, 18, 19 under 35 U.S.C. 102(e) as allegedly anticipated by Chen et al. (US 6,886,925). The remaining claims were rejected under 35 USC 103(a) as allegedly obvious over Chen in view of one or more of Park (US 6,702,428), Singh (US 6,210,522), Song (US 2004/0100535), Murai (US 2003/0227518), or Takeda (US 2002/0054201). Applicant respectfully disagrees, and for at least the reasons that follow, respectfully requests that the rejections be reconsidered and withdrawn.

Common Ownership of Principal Reference

As the Examiner noted in the Office Action, the principal reference (Chen) and the present application have a common assignee, and the Chen reference does not constitute prior art (in that it is not invented by another) if the subject matter disclosed but not claimed therein was invented by the common inventors of the present application. Indeed, three of the five inventors of the present application were also inventors of the Chen reference, and the Applicant is intimately familiar with the teachings of the cited Chen patent. At this time, the Applicant has elected simply to distinguish the claims of the present application on a substantive basis, rather than submit a declaration under 37 CFR 1.132. However, should the Examiner not accept the arguments set forth herein, Applicant hereby reserves the right to submit an appropriate declaration from the common inventors, to have the Chen reference removed from consideration. Without the Chen reference, all claims 1-19 patently define over the remaining prior art of record.

Again, at this time, however, Applicant has elected merely to substantively distinguish the present claims from the teaching of Chen, based on Applicant's intimate familiarity with the subject matter of that reference.

Rejections under 35 U.S.C. 102

Claims 1, 11, 15, 16, 18, 19 were tentatively rejected under 35 U.S.C. 102(e) as allegedly anticipated by Chen et al. Regarding claims 1, 11, 16, 19, the claimed embodiments define an inkjet printhead or a method manufacturing the inkjet printhead. The printhead of the application comprises a chamber for storing liquid above the heating area. The chamber comprises a first side and a second side. The first side faces the heating area, and the second side is connected to the first side and has an exit from thereon through which the liquid is dispensed.

Specifically, independent claims 1, 11, 16, and 19 respectively define:

1. A method for manufacturing an inkjet printhead comprising:
providing a substrate and a porous material;
forming a heating layer on the substrate;
forming a conductive layer on the substrate, wherein the conductive layer conducts a current to the heating layer, and a heating area is defined by the conductive layer and the heating layer;
forming a chamber for storing liquid above the heating area, wherein the chamber includes a first side and a second side, the first side faces the heating area, the second side is connected to the first side, and the chamber is formed with an exit, from which the liquid is dispensed, on the second side; and
placing the porous material on the chamber so that the liquid flows into the chamber therethrough.

11. An inkjet printhead comprising:
a substrate;
a heating layer disposed on the substrate to dispense liquid;
a conductive layer disposed on the substrate to conduct a current to the heating layer, wherein a heating area is defined by the conductive layer and the heating layer;

a chamber, disposed on the heating area, having a first side and a second side, wherein the first side faces the heating area, the second side is connected to the first side, and the chamber is formed with an exit, from which the liquid is dispensed, on the second side; and
a porous material disposed on the substrate, wherein the liquid flows into the chamber through the porous material.

16. A method for manufacturing an inkjet printhead comprising:
providing a substrate, a porous material, and a nozzle plate;
forming a heating layer on the substrate;
forming a conductive layer on the substrate, wherein the conductive layer conducts a current to the heating layer, and a heating area is defined by the conductive layer and the heating layer;
forming an adhesive layer on the conductive layer;
placing the porous material on the adhesive layer *to form a chamber for storing liquid, wherein the liquid flows into the chamber through the porous material, the chamber includes a first side and a second side, the first side faces the heating area so that the liquid in the chamber is located above the heating area, and the second side is connected to the first side;*
and
adhering the nozzle plate to the second side of the chamber, wherein the nozzle plate includes at least one orifice.

19. An inkjet printhead comprising:
a substrate;
a heating layer disposed on the substrate to dispense liquid;
a conductive layer disposed to conduct a current to the heating layer, wherein a heating area is defined by the conductive layer and the heating layer;
an adhesive layer disposed on the conductive layer;
a porous material, disposed on the substrate, *including a chamber, wherein the liquid flows to the chamber through the porous material, the chamber has a first side and a second side, the first side faces the heating area so that the liquid in the chamber is located above the heating area, and the second side is connected to the first side;* and
a nozzle plate, disposed on the second side of the chamber, including at least one orifice.

(*Emphasis added.*) Independent claims 1, 11, 16, and 19 patently define over the cited art for at least the reason that the cited art fails to disclose at least those features emphasized above.

In Chen, the chamber 91 is also above the chamber. The heating layer 30 is, however, outside the chamber so that the first side does not face the heating layer 30. The heating layer 30 is disposed beneath the first side. The exit 70 is formed on the first side and goes through the

substrate 10. The exit of the present application is formed on the second side and does not go through the substrate. For at least this reason, the structure of the claimed embodiments is different from that of the Chen, and the rejections of independent claims 1, 11, 16, and 19 should be withdrawn.

For the structure of Chen, when the resolution of inkjet is increased, the area of the heating layer must be reduced, and the size of the exit must also be reduced but not proportional to the reduction of heating layer. If the resolution is to be increased even higher, it is unable to form an exit of proper size on the heating layer. In the structure of the present application, as the exit is formed on the second side (instead of the first side) and not through the heating layer, the exit size is independent of the resolution, and the resolution can be very high (and the exit of proper size can still be formed). Accordingly, the structure of the present application is superior over Chen in resolution.

For at least these reasons, the rejections of independent claims 1, 11, 16, and 19 should be withdrawn. As all remaining claims depend from one of these independent claims, all remaining rejections should be withdrawn for at least the same reasons.

As a separate and independent basis for the patentability of all claims rejected under 35 U.S.C. § 103, Applicant respectfully traverses the rejections as failing to identify a proper basis for combining the cited references. For example, when combining Park with Chen, the Office Action stated only that the combination would have been obvious “to improve the ejection characteristics of the ink droplets.” (Office Action, page 7). Likewise, when further combining select teachings from Singh, the Office Action stated only that the combination would have been obvious “to achieve the bonding of two materials.” (Office Action, p. 8). When combining the

select teachings of Song with Chen, the Office Action stated only that the combination would have been obvious “to protect the basis material from degradation and corrosion.” (Office Action, p. 9). When further combining Murai with the select teachings of Song and Chen, the Office Action stated only that the combination would have been obvious “to bond two layers together.” (Office Action, p. 10). When combining the select teachings of Takeda with Song and Chen, the Office Action stated only that the combination would have been obvious “to protect the basis material from degradation and corrosion.” (Office Action, p. 10). Finally, when combining the select teachings of Singh with Song and Chen, the Office Action stated only that the combination would have been obvious “to achieve the bonding of two materials.” (Office Action, p. 11). These alleged motivations are clearly improper in view of well-established Federal Circuit precedent.

It is well-settled law that in order to properly support an obviousness rejection under 35 U.S.C. § 103, there must have been some teaching in the prior art to suggest to one skilled in the art that the claimed invention would have been obvious. W. L. Gore & Associates, Inc. v. Garlock Thomas, Inc., 721 F.2d 1540, 1551 (Fed. Cir. 1983). More significantly,

“The consistent criteria for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this [invention] should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. ...” Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure... In determining whether such a suggestion can fairly be gleaned from the prior art, the full field of the invention must be considered; for the person of ordinary skill in the art is charged with knowledge of the entire body of technological literature, including that which might lead away from the claimed invention.”

(*Emphasis added.*) In re Dow Chemical Company, 837 F.2d 469, 473 (Fed. Cir. 1988).

In this regard, Applicant notes that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also

requires the prior art to suggest both the combination of elements and the structure resulting from the combination. Stiftung v. Renishaw PLC, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more prior art references, the prior art must properly suggest the desirability of combining the particular elements to derive an inkjet printhead, as claimed by the Applicant.

When an obviousness determination is based on multiple prior art references, there must be a showing of some “teaching, suggestion, or reason” to combine the references. Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1383 (Fed. Cir. 1997) (also noting that the “absence of such a suggestion to combine is dispositive in an obviousness determination”).

Evidence of a suggestion, teaching, or motivation to combine prior art references may flow, inter alia, from the references themselves, the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved. See In re Dembiczak, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in whatever form, must nevertheless be “clear and particular.” Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617.

If there was no motivation or suggestion to combine selective teachings from multiple prior art references, one of ordinary skill in the art would not have viewed the present invention as obvious. See In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); Gambro Lundia AB, 110 F.3d at 1579, 42 USPQ2d at 1383 (“The absence of such a suggestion to combine is dispositive in an obviousness determination.”).

Significantly, where there is no apparent disadvantage present in a particular prior art reference, then generally there can be no motivation to combine the teaching of another reference with the particular prior art reference. Winner Int'l Royalty Corp. v. Wang, No 98-1553 (Fed. Cir. January 27, 2000).

For at least the additional reason that the Office Action failed to identify proper motivations or suggestions for combining the various references to properly support the rejections under 35 U.S.C. § 103, those rejections should be withdrawn.

Should the Examiner believe that a teleconference would be helpful to expedite the examination of this application, the Examiner is invited to contact the undersigned.

No fee is believed to be due in connection with this amendment and response. If, however, any fee is deemed to be payable, you are hereby authorized to charge any such fee to Deposit Account No. 20-0778.

Respectfully submitted,

By: 

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